CLAIMS

What is claimed is:

1. A network device coupled to a network of devices, the network device comprising:
    a. one or more applications;
    b. a network layer coupled to interface with one or more other network devices;
    c. a communications layer to provide a communications protocol to manage data content exchange between the network device and the one or more other network devices; and
    d. an extension layer to provide document type definition extensions to the communications layer, wherein the document type definition extensions define a hierarchical data content structure for the data content and metadata corresponding to the hierarchical data content structure.

2. The network device of claim 1 wherein the hierarchical data content structure comprises a plurality of channels.

3. The network device of claim 2 wherein each channel within the plurality of channels includes one or more content sub-channels, wherein each channel provides data content of a related subject-matter and each content sub-channel within a given channel segments the data content within the given channel according to more specific subject-matter than the subject-matter of the given channel.

4. The network device of claim 3 wherein the metadata defines attributes associated with each channel and content sub-channel within the hierarchical data content structure.

5. The network device of claim 3 wherein a first data content is associated with a first channel and a first content sub-channel within the first channel.

6. The network device of claim 5 wherein the first data content is associated with the first channel and the first content sub-channel according to a subject-matter of the first data content, the specific subject-matter of the first channel and the more specific subject-matter of the first content sub-channel.

7. The network device of claim 1 wherein the communications layer comprises an Information and Content Exchange protocol.

8. The network device of claim 7 wherein the Information and Content Exchange protocol includes document type definitions and the document type definition extensions provide extensions to the document type definitions of the Information and Content Exchange protocol.

9. The network device of claim 8 wherein the document type definition extensions are extensible markup language (XML)-based.

10. A method of providing data content between a first network device and one or more other network devices, the method comprising:
    a. providing a communications protocol to manage data content exchange between the first network device and the one or more other network devices;
    b. providing document type definition extensions to the communications protocol, wherein the document type definition extensions define a hierarchical data content structure for the data content and metadata corresponding to the hierarchical data content structure; and
    c. transmitting data content between the first network device an the one or more other network device according to the communication protocol and the document type definition extensions to the communications protocol.

11. The method of claim 10 further comprising configuring the hierarchical data content structure into a plurality of channels.

12. The method of claim 11 further comprising configuring each channel within the plurality of channels into one or more content sub-channels, wherein each channel provides data content of a related subject-matter and each content sub-channel within a given channel segments the data content within the given channel according to more specific subject-matter than the subject-matter of the given channel.

13. The method of claim 12 wherein the metadata defines attributes associated with each channel and content sub-channel within the hierarchical data content structure.

14. The method of claim 12 further comprising associating a first data content with a first channel and a first content sub-channel within the first channel.

15. The method of claim 14 wherein the first data content is associated with the first channel and the first content sub-channel according to a subject-matter of the first data content, the specific subject-matter of the first channel and the more specific subject-matter of the first content sub-channel.

16. The method of claim 10 wherein the communications protocol comprises an Information and Content Exchange protocol.

17. The method of claim 16 wherein the Information and Content Exchange protocol includes document type definitions and the document type definition extensions provide extensions to the document type definitions of the Information and Content Exchange protocol.

18. The method of claim 17 wherein the document type definition extensions are extensible markup language (XML)-based.

19. An apparatus for providing data content between a first network device and one or more other network devices, the apparatus comprising:
    a. means for providing a communications protocol to manage data content exchange between the first network device and the one or more other network devices;

b.　means for providing document type definition extensions to the communications protocol, wherein the document type definition extensions define a hierarchical data content structure for the data content and metadata corresponding to the hierarchical data content structure; and

c.　means for transmitting data content between the first network device an the one or more other network device according to the communication protocol and the document type definition extensions to the communications protocol.

20.　The apparatus of claim 19 further comprising means for configuring the hierarchical data content structure into a plurality of channels.

21.　The apparatus of claim 20 further comprising means for configuring each channel within the plurality of channels into one or more content sub-channels, wherein each channel provides data content of a related subject-matter and each content sub-channel within a given channel segments the data content within the given channel according to more specific subject-matter than the subject-matter of the given channel.

22.　The apparatus of claim 21 wherein the metadata defines attributes associated with each channel and content sub-channel within the hierarchical data content structure.

23.　The apparatus of claim 21 further comprising means for associating a first data content with a first channel and a first content sub-channel within the first channel.

24.　The apparatus of claim 23 wherein the first data content is associated with the first channel and the first content sub-channel according to a subject-matter of the first data content, the specific subject-matter of the first channel and the more specific subject-matter of the first content sub-channel.

25.　The apparatus of claim 19 wherein the communications protocol comprises an Information and Content Exchange protocol.

26. The apparatus of claim 25 wherein the Information and Content Exchange protocol includes document type definitions and the document type definition extensions provide extensions to the document type definitions of the Information and Content Exchange protocol.

27. The apparatus of claim 26 wherein the document type definition extensions are extensible markup language (XML)-based.

28. A network comprising:
   a. one or more network devices; and
   b. a first network device coupled to the one or more other network device, the first network device comprising:
      i. one or more applications;
      ii. a network layer coupled to interface with the one or more other network devices;
      iii. a communications layer to provide a communications protocol to manage data content exchange between the first network device and the one or more other network devices; and
      iv. an extension layer to provide document type definition extensions to the communications layer, wherein the document type definition extensions define a hierarchical data content structure for the data content and metadata corresponding to the hierarchical data content structure.

29. The network of devices of claim 28 wherein the hierarchical data content structure comprises a plurality of channels.

30. The network of devices of claim 29 wherein each channel within the plurality of channels includes one or more content sub-channels, wherein each channel provides data content of a related subject-matter and each content sub-channel within a given channel segments the data content within the given channel according to more specific subject-matter than the subject-matter of the given channel.

31.   The network of devices of claim 30 wherein the metadata defines attributes associated with each channel and content sub-channel within the hierarchical data content structure.

32.   The network of devices of claim 30 wherein a first data content is associated with a first channel and a first content sub-channel within the first channel.

33.   The network of devices of claim 32 wherein the first data content is associated with the first channel and the first content sub-channel according to a subject-matter of the first data content, the specific subject-matter of the first channel and the more specific subject-matter of the first content sub-channel.

34.   The network of devices of claim 28 wherein the communications layer comprises an Information and Content Exchange protocol.

35.   The network of devices of claim 34 wherein the Information and Content Exchange protocol includes document type definitions and the document type definition extensions provide extensions to the document type definitions of the Information and Content Exchange protocol.

36.   The network of devices of claim 35 wherein the document type definition extensions are extensible markup language (XML)-based.

37.   A network device coupled to a network of devices, the network device comprising:
    a.   one or more applications;
    b.   a network layer coupled to interface with one or more other network devices;
    c.   an Information and Content Exchange protocol including document type definitions to manage data content exchange between the network device and the one or more other network devices; and
    d.   extensions to the document type definitions extensions, wherein the document type definition extensions define a hierarchical data content structure for the data content and metadata corresponding to the hierarchical data content structure.

38. The network device of claim 37 wherein the hierarchical data content structure comprises a plurality of channels.

39. The network device of claim 38 wherein each channel within the plurality of channels includes one or more content sub-channels, wherein each channel provides data content of a related subject-matter and each content sub-channel within a given channel segments the data content within the given channel according to more specific subject-matter than the subject-matter of the given channel.

40. The network device of claim 39 wherein the metadata defines attributes associated with each channel and content sub-channel within the hierarchical data content structure.

41. The network device of claim 39 wherein a first data content is associated with a first channel and a first content sub-channel within the first channel.

42. The network device of claim 41 wherein the first data content is associated with the first channel and the first content sub-channel according to a subject-matter of the first data content, the specific subject-matter of the first channel and the more specific subject-matter of the first content sub-channel.

43. The network device of claim 37 wherein the document type definition extensions are extensible markup language (XML)-based.